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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/225,233	01/04/1999	KEITH HENRY STOCKMAN CAMPBELL	112800.401	2711

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EXAMINER
CROUCH, DEBORAH

ART UNIT	PAPER NUMBER
1632	

DATE MAILED: 10/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/225,233	Applicant(s) CAMPBELL ET AL.	
	Examiner Deborah Crouch	Art Unit 1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *56-91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *56-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Applicant's arguments filed July 10, 2002 in paper no. 22 have been fully considered but they are not persuasive. The amendment has been entered. Claims 56-91 are pending.

Applicant's arguments that the presence of the term "cloned" in the claims indicates the "hand of man" requirement for statutory subject matter. Therefore the rejection made in the office action mailed January 30, 2002 in paper no. 20 so withdrawn.

The rejections made in the office action mailed December 19, 2001 in paper no. 6 under 35 U.S.C. 112, second paragraph have been overcome by applicant's amendments

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 56-91 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 45-56 of copending Application No. 09/658,862 This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The claims are to a product, nonhuman embryo clones and nonhuman mammalian clones, produce by process. While the process steps themselves are obvious over each other, the products are identical.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438,

164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 56-91 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,252,133 B1. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim not is patentably distinct from the reference claim(s) because the examined claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other because the presently claimed cloned nonhuman embryos and cloned nonhuman mammals are made a process claimed in '133.

The present claims are drawn to reconstituted nonhuman mammalian embryo clones and nonhuman mammal clones that contain the same set of chromosomes as a pre-existing, nonhuman, non-embryonic mammal. The embryo clone is produced by nuclear transfer of a quiescent diploid donor cell or in the G0 phase of the cell cycle into an suitable recipient cell of the same species as the cell, followed activation and incubation to produce an embryo. To produce the mammal, the embryo clone is transferred to a recipient female of the same species as the cell. The donor cell is from a pre-existing, nonhuman, non-embryonic mammal. Claim 1 of '133 are to methods of reconstructing an embryo of a

nonhuman mammal comprising a donor diploid cell in the G0, quiescent, phase of the cell cycle into an unactivated, enucleated MII phase oocyte of the same species as the cell, maintaining the reconstructed embryo without activation, activating the reconstructed embryo, and, transfer the reconstructed embryo to a female of the same species, to produce the mammal. The donor cells of the present claims fall within the scope of "diploid donor cell" of the claims in '133, and donor cells are defined in the specification as coming from a pre-existing, nonhuman mammal non-embryonic mammal. '133 claims a mammal is produced by transferring the embryo to a female mammal of the same species.

Therefore, at the time of the instant invention, it would have been obvious to the ordinary artisan to produce a cloned nonhuman embryo or a cloned nonhuman mammal as presently claimed given the method steps of claim 1 in '133.

Claims 56-91 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 13-21 of U.S. Patent No. 6,147,276. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim not is patentably distinct from the reference claim(s) because the examined claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other because the presently claimed cloned nonhuman embryos and cloned nonhuman mammals are made a process claimed in '276.

The present claims are drawn to reconstituted nonhuman mammalian embryo clones and nonhuman mammal clones that contain the same set of chromosomes as a pre-

existing, nonhuman, non-embryonic mammal. The embryo clone is produced by nuclear transfer of a quiescent diploid donor cell or in the G0 phase of the cell cycle into an suitable recipient cell of the same species as the cell, followed activation and incubation to produce an embryo. To produce the mammal, the embryo clone is transferred to a recipient female of the same species as the cell. The donor cell is from a pre-existing, nonhuman, non-embryonic mammal. Claims 1-10 and 13-21 of '276 are to methods of reconstructing a nonhuman mammalian embryo comprising transferring the nucleus of a quiescent donor diploid cell, G0 phase of the cell cycle, into a suitable enucleated recipient cell of the same species, defined in the '276 specification as being an MII enucleated oocyte, activating the reconstructed embryo, incubating the reconstituted cell so that an embryo develops and, transfer the reconstructed embryo to a female of the same species, to produce the mammal. The donor cells are defined in the specification as coming from a pre-existing, nonhuman mammal non-embryonic mammal. The remainder of the present method steps are contained in the method steps in '276.

Therefore, at the time of the instant invention, it would have been obvious to the ordinary artisan to produce a cloned nonhuman embryo or a cloned nonhuman mammal as presently claimed given the method steps of claims 1-10 and 13-21 in '276.

Applicant rebuts the art rejections, below, collectively. Thus, the examiner's response is at the end of the rejections.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 56-59, 65, 66, 72-74 and 80-90 (sheep) remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by McLaughlin et al (1990) Reproduction Fertil. Develop. 2, 619-622 for reasons presented in the office action mailed January 30, 2002 in paper no. 20.

McLaughlin teaches the production of reconstituted sheep embryos and sheep (Merino lambs) by nuclear transfer of the reconstituted sheep embryos, where the donor nucleus is from sheep embryonic cells (page 620, parag. 2-5, and page 621, parag. 1). Both the sheep embryo and sheep of McLaughlin contains the same set of chromosomes as an individual sheep, that is the same chromosomes as the donor sheep. The source of the donor nucleus, be it sheep embryonic cells as in McLaughlin or a quiescent sheep diploid donor cell as claimed, does not provide a patentable distinction on the resulting sheep embryo or sheep. The source of the donor nucleus does not alter the resultant sheep embryo or sheep such that the sheep embryo or sheep encompassed by applicant's claims are patentably distinct from those of McLaughlin et al.

Claims 56-58, 60, 65, 67, 72, 73, 75 and 80-89 (pig) remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Prather et al (1989) Biology of Reproduction 41, 414-418 for reasons presented in the office action mailed January 30, 2002 in paper no. 20.

Prather teaches the production of reconstituted pig embryos and pigs by nuclear transfer of the reconstituted pig embryos, where the donor nucleus is from a pig embryonic cell (page 415, col.1, parag. 1 to page 416, line 8, and page 416, col. 2, lines 8-10). Both the pig embryos and pig of Prather contains the same set of chromosomes as an individual pig, that is the same chromosomes as the donor pig. The source of the donor nucleus, be it pig embryonic cells as in Prather or a quiescent pig diploid donor cell as claimed, does not

provide a patentable distinction on the resulting pig embryo or pig. The source of the donor nucleus does not alter the resultant pig embryo or pig such that the pig embryo or pig encompassed by applicant's claims are patentably distinct from those of Prather et al.

Claims 65-58, 61, 65, 68, 72, 73, 76 and 80-89 (goat) remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yong et al (1991) Threiogenology 35, page 299 for reasons presented in the office action mailed January 30, 2002 in paper no. 20.

Yong teaches the production of reconstituted goat embryos and goats by nuclear transfer of the reconstituted goat embryos, where the donor nucleus is from a goat embryonic cell (parag. 2, and Table). Both the goat embryo and goats of Yong contains the same set of chromosomes as an individual goat, that is the same chromosomes as the donor goat. The source of the donor nucleus, be it goat embryonic cells as in Yong or a quiescent goat diploid donor cell as claimed, does not provide a patentable distinction on the resulting goat embryo or goats. The source of the donor nucleus does not alter the resultant goat embryo or goats such that the goat embryo or goats encompassed by applicant's claims are patentably distinct from those of Yong et al.

Claims 56-58, 62, 65, 69, 72, 73, 77 and 80-89 (mouse) remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cheong et al (1993) Biology of Reproduct. 48, 958-963 for reasons presented in the office action mailed January 30, 2002 in paper no. 20.

Cheong teaches the production of reconstituted mouse embryos and mice by nuclear transfer of the reconstituted mouse embryos, where the donor nucleus is from a mouse embryonic cell (page 959, col. 1, parag. 2 to col. 2, line 10 and page 962, Table 4). Both the mouse embryo and mice of Cheong contains the same set of chromosomes as an individual mouse, that is the same chromosomes as the donor mouse. The source of the donor nucleus, be it mouse embryonic cells as in Cheong or a quiescent mouse diploid donor

cell as claimed, does not provide a patentable distinction on the resulting mouse embryo or mice. The source of the donor nucleus does not alter the resultant mouse embryo or mice such that the mouse embryo or mice encompassed by applicant's claims are patentably distinct from those of Cheong et al.

Claims 56-58, 63, 65, 70, 72, 73, 78 and 80-89 (rabbit) remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yang et al (1992) Biology of Reproduct. 47, 636-643 for reasons presented in the office action mailed January 30, 2002 in paper no. 20.

Yang teaches the production of reconstituted rabbit embryos and rabbits by nuclear transfer of the reconstituted rabbit embryos, where the donor nucleus is from a rabbit embryonic cells (page 636, col. 2, parag. 2 to page 639, through parag. 2; page 640, col. 2, parags. 1 and 2, and page 642, Table 4). Both the rabbit embryo and rabbit of Yang contains the same set of chromosomes as an individual rabbit, that is the same chromosomes as the donor rabbit. The source of the donor nucleus, be it rabbit embryonic cells as in Yang or a quiescent rabbit diploid donor cell as claimed, does not provide a patentable distinction on the resulting rabbit embryo or rabbit. The source of the donor nucleus does not alter the resultant rabbit embryo or rabbit such that the rabbit embryo or rabbit encompassed by applicant's claims are patentably distinct from those of Yang et al.

Claims 56-58, 64, 65, 71-73, and 79-89 (cows) remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sims et al. (1993) Proceed. Natl. Acad. Sci. 90, 6143-6147.

Sims teaches the production of reconstituted bovine embryos and bovines by nuclear transfer of the reconstituted bovine embryos, where the donor nucleus is from a bovine cultured inner cell mass cell (page 6145, col. 2, parag. 2, lines 1-7 and page 6146, col. 1, parag. 2, lines 6-11). Both the bovine embryo and bovine of Sims contains the same set of

chromosomes as an individual bovine, that is the same chromosomes as the donor bovine. The source of the donor nucleus, be it bovine inner cell mass cell as in Sims or a quiescent bovine diploid donor cell as claimed, does not provide a patentable distinction on the resulting bovine embryo or bovine. The source of the donor nucleus does not alter the resultant bovine embryo or bovine such that the bovine embryo or bovine encompassed by applicant's claims are patentably distinct from those of Sims et al.

Claims 90 and 91 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by WO 95/17500 published 29 June 1995 (Stice).

Stice teaches transgenic nonhuman mammalian embryos and transgenic nonhuman mammals produced by nuclear transfer where the nuclear donor is an embryonic cell comprising a genetic modification (page 33, lines 14-24). The source of the donor nucleus, be it a genetically modified nonhuman embryonic cell as Stice teaches or a genetically modified non-embryonic, nonhuman mammalian cell as claimed, does not provide a patentable distinction on the resulting genetically modified nonhuman embryo or genetically modified nonhuman mammal. The source of the donor nucleus does not alter the embryo or mammal such that the embryo or mammal encompassed by applicant's claims is patentable distinct from those of Stice et al. Thus, Stice clearly anticipates the claimed invention.

Although the Stice is a new rejection, the examiner believes that applicant's arguments would be the same. Therefore, applicant's arguments and the examiner's rebuttal is present below.

Applicant argues that the resultant mammals and embryos in each of the above references are products of conventional reproduction in that they arise form the combination of male and female gametes to form an embryonic cell. Applicant argues that because of the conventional reproduction, the do not have the same set of chromosomes

from prior existing mammal, and thus are not clones of a prior existing mammal. Therefore the cited references cannot anticipate the present claims. Applicant argues that the embryos and mammals of the cited references were made by nuclear transfer from embryonic cells, and thus have the same set of chromosomes as an embryonic cell. Applicant argues that the embryos and mammals of the cited prior art have a mixture of genetic material. Applicant argues that because of their origins, the claimed embryos and mammals cannot be considered identical in structure or composition to the mammals and embryos of the cited references. Applicant argues that an embryo or mammal's characteristics are defined by the source of its nuclear material, together with environmental factors. Applicant submits Ayala to support that the observable characteristics of an individual, their phenotype, result from the interaction between the genotype of an individual and the environment in which development occurs. Applicant argues that because an embryo derived by sexual reproduction will not be identical or substantially identical to an embryo clone that receives its sets of chromosomes from a single parent. Applicant argues that their claimed embryos and mammals had never existed prior to applicant's invention. Applicant argues that due to environmental factors the clones would have different fingerprints, irises, different retina and different skin and fur pigmentation. Applicant provides Prather et al, U.S. Patent 4,641,349 and Wells et al to support these differences in phenotype. These arguments are not persuasive.

The presently claimed embryos and mammals are a product by process claim. The source of the chromosomes is part of the process. The concept of cloning by nuclear transfer is understood sufficiently to understand that the gist of applicant's arguments is that through the process of nuclear transfer using a differentiated, somatic cell as nuclear donor that they have produced a product not known before. One that is novel and non-

obvious. However, the presently claimed products are not seen as having any distinction between them. In a side-by-side comparison, an embryo or a mammal produced by the method of any of the cited references would look and behave identically to an embryo or mammal of the present claims. The structure and composition of the claimed embryos or mammals would be identical or substantially identical to those of the cited references. The embryo and mammal of the claims would consist of a single nucleus per cell, multiple cells in the embryo that would develop into a blastocyst, and the blastocyst, when implanted into a female of the same species, would develop into a mammal. The source of the chromosomes whether the result of fertilization of an ova or the result of nuclear transfer, in the embryo or mammal, the source of genome cannot be distinguished. One cannot simply look at the genome of embryos or mammals and discern those genomes that are the result of fertilization and those that are the result of nuclear transfer. Thus, the mixture of genetic material from male and female parents, as in the case of any of the cited references, or the donation by a quiescent, diploid cell, as presently claimed, has not been shown by applicant to differentially affect a phenotype of an embryo or mammal. Whether the embryo is produced by fertilization followed by nuclear transfer or by nuclear transfer from a cell, the resultant embryo has the same structure, same function, and same developmental potential. Whether the mammal is produced by fertilization followed by nuclear transfer or by nuclear transfer from an isolated diploid cell, the mammals are structurally and functionally indistinguishable. Applicant has not provided any evidence that the present embryos and mammals are structurally any different from those of the cited prior art. It is noteworthy that both applicant's embryos and the cited art embryos developed into progeny. This also provides additional evidence that the developmental potential of applicant's and the cited art embryos are the same. This in turn lends credence to the

rejection. This comparison clearly demonstrates that both embryos, although made by materially different and separate protocols, function the same. Applicant has not pointed to any phenotype, structural, developmental differences between the claimed embryos and mammals and those of the cited prior art. It is noted that environmental factors, as described by applicant, affect the resultant offspring, and not the embryos. Embryos do not have fingerprints, irises, retina, skin or fur. Further, any such phenotypic variation in a mammal is not seen as altering the structure or function of the mammal. Applicant has not pointed to any structural or functional difference between embryos and mammals produced by the method of the claims and those produced by the method of the cited prior art. The differences have to be to the embryos and mammals claimed and not to the method of making them. The rejection is maintained because applicant has not shown a difference between the embryos of the cited prior art and the presently claimed embryos. While the methods of making the embryos of applicant and the cited prior art are distinct, the resulting embryos are not distinguishable. Applicant's embryos and mammals did in fact exist prior to their invention. Applicant's embryos and mammals are clones of embryos and mammals that existed prior to the claimed invention. The claims state that.

Applicant did not provide any arguments regarding, Prather et al, U.S. Patent 4,641,349 and Wells et al. Thus the examiner does not know how applicant believes these references distinguish applicant's embryos and mammals from the cited prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Clark, SPE of AU 1632 whose telephone number 703-305-4051. The examiner can normally be reached on M-Th.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0916.

Deborah Crouch

Deborah Crouch, Ph.D.
Primary Examiner
Art Unit 1632

D.C.
September 29, 2002